Y 9/987

Preprint from the 1987

BUREAU OF MINES MINERALS YEARBOOK

The Mineral Industry of Yugoslavia

UNITED STATES DEPARTMENT OF THE INTERIOR

I 28.37/a 2:

READEX FICHE best copy available

UNITED STATES DEPARTMENT OF THE INTERIOR • Manuel J. Lujan, Jr., Secretary

BUREAU OF MINES • T S Ary, Director

This publication is a chapter from the current Bureau of Mines Minerals Yearbook, comprising *Volume I, Metals and Minerals; Volume II, Area Reports: Domestic; Volume III, Area Reports: International.* The separate volumes of the Yearbook are sold by the Superintendent of Documents, Washington, D.C. 20402.

The Mineral Industry of Yugoslavia

By Walter G. Steblez[1]

Yugoslavia remained a producer of a broad range of mineral commodities. Although by world standards the country was not a dominant producer of any one mineral or fuel, Yugoslavia was by European standards an important producer of antimony, bauxite, copper, lead, and zinc. The country was also an important producer of a wide variety of industrial minerals. In 1987, Yugoslavia's economy showed a significant downturn. The gross domestic product declined for the first time in 4 years and industrial production increased only slightly. The rate of inflation, the highest since the end of World War II, rose by 170% in 1987. Industrial imports also declined, reducing needed supplies of machinery and equipment for the mining industry, which adversely affected mineral production during the year. Major events in the mineral industry in 1987 included serious financial difficulties at the Trepca lead-zinc mining and beneficiation complex in Kosovo, the construction startup of the third stage of the Zeljezara-Zenica steelworks, the commissioning of a new iron ore concentrator at the Sisak steelworks in Croatia, the modernization of the Kirdicevo aluminum works, and the development plan for the Rudnik Boksita Vlasenica bauxite deposit in Bosnia. In the energy field, construction startup of a new brown coal mine began at Petisevskoye Polje near the Hungarian border.

Government Policies and Programs.—Since 1945, the Socialist Federal Republic of Yugoslavia, a federation consisting of the Serbian, Croatian Slovenian, Macedonian, Bosnian-Herzegovinian, and Montenegrin Republics, developed along centrally planned economy lines. The country's economy not only showed many features in common with other East European centrally planned economy countries, but also several important differences. Although the Yugoslav economy and mineral industry operated under the state-owned enterprise system, mining and other industrial enterprises were relatively independent in respect to maximizing profits as long as general economic guidelines were met. State-owned enterprises operated in accordance with the Law of Self-Management by Workers Councils, which gave workers direct participation in enterprise management. Government regulations adopted in 1984 eliminated the 49% ceiling on foreign investment equity and removed restrictions on profits that could be earned and repatriated by foreign investors. However, foreign partners in a joint venture were entitled to only 50% representation in venture management regardless of the amount of equity held. Since 1984, foreign investment in Yugoslavia's mineral industry was involved primarily in the country's mineral fuels sector.

To control inflation and promote production and exports, the Government adopted measures in November that included administrative wage and price controls. The rate of inflation was reduced but was not brought down to manageable levels by year-end. Also, the Government negotiated with the International Monetary Fund to reschedule Yugoslavia's foreign debt to attract new foreign credits.

To reduce the country's dependence on imported energy, the Government planned to invest about $8.1 billion (Yugoslav evaluation) to further develop domestic energy sources, largely coal, natural gas, and petroleum, by the turn of the century. A Government study of Yugoslavia's mineral in-

dustry capacity and prospects through 1999 indicated a planned 30% increase in the output of primary aluminum by the year 2000 compared with that of 1986. Similarly, the production of copper would increase by 21%, that of lead by 88%, and that of zinc by 107%. To achieve these output levels, an investment of $3.4 billion would be required for the exploration of new ore reserves, development of new mines, and the upgrading of existing infrastructure.

PRODUCTION

The planning of mining output and other industrial activity remained decentralized and subject only to general economic guidelines set by the Government. Major enterprises in the country's mineral industry were Energoinvest (aluminum), Rudarsko Metalurski Kombinat (RMK) Zajaca (antimony), Dalmacija Cement (cement), Rudarsko Topionicarski Bazen (RTB) Bor (copper), Jugohrom (ferroalloys), RMK Zenica (iron and steel), Rudarsko-Metalursko-Hemijski Kombinat Olovo i Cink (RMHK) Trepca (lead and zinc), and INA Zagreb (oil, gas, and refinery products). The output of most sectors of the mineral industry declined compared with those of 1986 with the exception of those involving the extraction and refining of petroleum and natural gas. Despite an increase in the mine production of coal, the output of clean marketable product declined by 12%. Likewise, the output of iron and steel declined by 3%, and that of nonferrous metal ores, nonferrous metals, and semimanufactures by 5%, 2%, and 6%, respectively. The production of industrial minerals also declined slightly.

Table 1.—Yugoslavia: Production of mineral commodities[1]

(Metric tons unless otherwise specified)

Commodity[2]	1983	1984	1985	1986[p]	1987[e]
METALS					
Aluminum:					
Bauxite thousand tons	3,500	3,347	3,250	3,459	[3]3,394
Alumina do	1,010	1,135	1,138	1,117	[3]1,113
Metal ingot:					
Primary[e]	[3]258,174	270,000	280,000	282,500	244,000
Remelted[e 4]	[3]25,385	31,567	36,092	37,670	37,084
Total	283,559	301,567	316,092	319,670	[3]281,084
Antimony:					
Mine and concentrator output:					
Ore, gross weight	50,961	51,000	71,000	61,000	[3]48,000
Sb content of ore	950	945	1,088	859	[3]834
Concentrate, gross weight	2,072	2,844	3,000	[e]2,800	4,300
Metal (regulus)	895	1,263	1,502	1,830	[3]1,002
Bismuth, smelter output	45	30	68	21	[3]73
Cadmium, smelter output	48	270	279	259	305
Chromium: Chromite concentrate (produced largely from imported ores)	[3]76,935	[3]110,022	75,000	75,000	102,000
Copper:					
Mine and concentrator output:					
Ore, gross weight thousand tons	23,443	25,279	26,166	27,864	[3]27,745
Cu content of ores[e]	[r 3]129,500	[r 3]137,575	[r]141,200	[r]144,800	138,700
Concentrate, gross weight thousand tons	543	609	582	536	[3]514
Metal:					
Blister and anodes:					
Primary	86,833	84,657	[r e]84,500	[r e]84,500	75,000
Remelted[4]	80,903	91,679	[r e]104,500	[r e]103,500	90,000
Total	167,736	176,336	189,000	188,000	[3]165,000
Refined:					
Primary	82,925	80,259	[r e]80,000	[r e]81,000	80,500
Remelted[4]	40,783	47,352	[r e]55,000	[r e]59,393	58,367
Total	123,708	127,611	[r e]135,000	140,393	[3]138,867
Gold, refined troy ounces	136,250	125,130	[e]110,000	[e]115,000	157,500
Iron and steel:					
Iron ore:					
Gross weight thousand tons	5,018	5,321	5,478	6,618	[3]5,983
Fe content do	1,529	1,837	[e]1,800	[r e]2,000	1,800

See footnotes at end of table.

Table 1.—Yugoslavia: Production of mineral commodities[1] —Continued

(Metric tons unless otherwise specified)

Commodity[2]	1983	1984	1985	1986[p]	1987[e]
METALS —Continued					
Iron and steel —Continued					
Iron concentrate, gross weight thousand tons	r2,424	2,502	2,482	2,995	3,247
Metal:					
Pig iron do.	2,845	2,855	3,120	3,063	2,868
Ferroalloys:					
Ferrochromium	63,807	75,441	r e50,000	r e50,000	50,000
Ferromanganese	39,677	47,375	r e40,000	40,000	40,000
Ferrosilicon	78,014	94,075	e93,000	90,000	90,000
Silicon metal	26,256	28,428	r e28,000	r e35,000	30,000
Ferrosilicomanganese	26,254	37,214	e67,000	65,000	61,000
Ferrosilicochromium	5,998	10,721	r e10,000	r e10,000	10,000
Other	r10,691	10,571	e11,000	r e10,000	10,000
Total	r250,697	r303,828	299,000	300,000	291,000
Steel, crude:					
From oxygen converters thousand tons	1,598	1,644	1,801	1,769	1,715
From Siemens-Martin furnaces do.	1,432	1,440	1,524	1,509	1,301
From electric furnaces do.	1,105	1,152	1,155	1,241	1,351
Total do.	4,135	4,236	4,480	4,519	4,367
Semimanufactures do.	4,649	5,667	5,634	5,411	6,260
Lead:					
Mine and concentrator output:					
Ore, gross weight (lead-zinc ore) do.	4,063	4,634	4,590	4,588	3,908
Pb content of ores	r114,385	r113,648	r e115,100	r e103,000	82,000
Concentrate, gross weight	144,010	148,026	e145,000	e145,000	133,800
Metal:					
Smelter:					
Primary	93,112	109,719	r e116,700	r e129,900	126,000
Secondary[5]	34,000	r11,548	r e15,000	r e21,000	20,000
Total	127,112	121,267	r e131,700	r e150,900	146,000
Refined:					
Primary[6]	r64,531	45,415	r e59,954	74,654	74,000
Secondary	r33,000	37,400	r e40,000	38,500	38,000
Total	97,531	82,815	99,954	113,154	112,000
Magnesium metal	4,763	5,139	e4,500	r e4,900	5,900
Manganese ore:					
Gross weight	31,643	21,079	e25,000	e25,000	28,000
Mn content	11,074	6,736	e9,500	9,500	9,800
Mercury[e] 76-pound flasks	1,500	1,700	1,800	1,800	2,900
Nickel, mine output:[e]					
Ore, gross weight thousand tons	500	600	800	700	750
Ni content of ore	r1,600	r2,200	r2,800	r3,200	3,500
Ni content of ferronickel	r1,000	r1,800	r2,800	r3,200	3,500
Platinum-group metals:					
Palladium troy ounces	2,926	3,476	e3,300	e3,100	3,200
Platinum do.	193	386	e250	e250	96
Selenium metal, refined kilograms	43,782	45,211	e46,000	e47,400	47,700
Silver, metal refined including secondary thousand troy ounces	3,987	4,051	5,015	5,690	4,855
Zinc:					
Zn content of lead and zinc ore	86,767	85,761	89,300	r e94,600	89,500
Concentrator output, gross weight	143,809	149,124	r e155,000	r e160,000	135,000
Smelter including secondary	88,049	92,649	83,398	89,286	118,067
INDUSTRIAL MINERALS					
Asbestos, all kinds	10,502	8,556	6,916	8,596	10,964
Barite	35,025	41,098	e35,000	e35,000	35,800
Cement, hydraulic thousand tons	9,532	9,315	9,028	9,127	8,963
Clays:					
Ceramic clay, crude	98,903	57,666	258,000	290,000	288,000
Fire clay:					
Crude	r343,799	249,613	227,000	213,000	174,000
Calcined	54,551	50,370	e65,000	e65,000	47,000
Kaolin	208,254	201,822	r e205,000	r e210,000	247,000
Feldspar, crude	41,372	33,917	49,000	48,000	45,000
Gypsum:					
Crude	622,942	606,636	r e610,000	r e620,000	580,000
Calcined	93,997	91,809	83,000	88,000	74,000

See footnotes at end of table

Table 1.—Yugoslavia: Production of mineral commodities[1] —Continued

(Metric tons unless otherwise specified)

Commodity[2]	1983	1984	1985	1986[p]	1987[e]
INDUSTRIAL MINERALS —Continued					
Lime:					
Quicklime thousand tons	1,696	1,997	r e1,950	r e1,750	1,790
Hydrated do	853	760	r e757	r e905	708
Total do	2,549	2,757	2,707	2,655	2,498
Magnesite:					
Crude	303,965	r326,699	e417,000	423,000	3403,000
Sintered	137,680	156,487	170,000	162,000	3149,000
Caustic calcined	11,527	13,743	14,278	14,420	310,217
Mica, all grades	946	r157	r e600	r e700	800
Nitrogen: N content of ammonia thousand tons	r500	609	766	667	3937
Pumice and related volcanic materials: Volcanic tuff	3504,514	500,000	510,000	500,000	510,000
Quartz, quartzite, glass sand:					
Quartz and quartzite thousand tons	201	262	e220	e225	3107
Glass sand do	2,391	2,141	2,337	2,406	32,417
Total do	2,592	2,403	2,557	2,631	32,524
Salt:					
Marine	28,874	44,151	e45,000	e48,000	348,000
From brines	194,709	188,839	e192,000	e194,000	3194,000
Rock	191,885	146,552	r173,000	e262,000	3258,000
Total	415,468	379,542	410,000	504,000	3500,000
Sand and gravel excluding glass sand thousand cubic meters	r24,206	r21,462	22,136	21,841	319,719
Sodium compounds: Sodium carbonate	189,374	188,291	199,629	207,968	3201,539
Stone excluding quartz and quartzite:					
Dimension:					
Crude:					
Ornamental thousand cubic meters	74	NA	NA	NA	NA
Other do	13	NA	NA	NA	NA
Partly worked facing thousand square meters	2,139	2,273	2,544	2,847	33,047
Cobblestones, curbstones, other thousand cubic meters	63	NA	NA	NA	NA
Dolomite thousand tons	954	1,522	1,716	2,306	3616
Shale do	7,936	7,111	7,814	7,888	37,771
Crushed and broken, n.e.s. thousand cubic meters	3,156	NA	NA	NA	NA
Milled marble and other do	8,800	NA	NA	NA	NA
Sulfur, pyrite, pyrrhotite:					
Pyrite, gross weight thousand tons	694	609	507	759	3609
Pyrrhotite, gross weight do	17	29	e20	20	20
Sulfur:					
Sulfur content of pyrite[7] do	291	255	213	319	3256
Sulfur content of pyrrhotite[7] do	7	8	e8	e8	8
Byproduct:					
Of metallurgy[e] do	180	160	170	175	175
Of petroleum[e] do	3	3	3	3	3
Total do	481	426	e394	505	442
MINERAL FUELS AND RELATED MATERIALS					
Carbon black[e]	324,690	24,000	25,000	25,000	25,000
Coal:					
Bituminous thousand tons	392	389	400	407	3379
Brown do	11,303	11,391	12,465	13,099	312,135
Lignite do	46,889	53,651	56,635	56,626	359,359
Total do	58,584	65,431	69,500	70,132	71,873
Coke:					
Metallurgical do	3,028	3,083	e3,000	e3,000	2,500
Breeze do	249	269	e345	e296	260
Foundry do	163	163	e200	e200	200
Total do	3,440	r3,515	3,545	3,496	32,960

See footnotes at end of table.

Table 1.—Yugoslavia: Production of mineral commodities[1] —Continued

(Metric tons unless otherwise specified)

Commodity[2]	1983	1984	1985	1986[p]	1987[e]
MINERAL FUELS AND RELATED MATERIALS —Continued					
Gas:					
Manufactured (excluding petroleum refinery gas):					
From coke plants ... million cubic feet	39,658	NA	NA	NA	NA
From lignite gasification plants ... do	3,672	NA	NA	NA	NA
Natural, gross production ... do	73,816	70,523	84,755	86,415	[3]101,954
Natural gas plant liquids: Propane and butane thousand 42-gallon barrels	1,979	NA	NA	NA	NA
Petroleum:					
Crude:					
As reported ... thousand tons	4,125	4,044	4,149	4,140	[3]3,867
Converted ... thousand 42-gallon barrels	30,554	29,954	30,731	30,665	28,685
Refinery products:					
Gasoline ... do	22,283	33,175	31,221	34,603	[3]34,076
Liquefied petroleum gas ... do	2,660	NA	NA	NA	NA
Jet fuel ... do	2,430	NA	NA	NA	NA
Kerosene ... do	182	NA	NA	NA	NA
Middle distillate fuel oil ... do	9,373	NA	NA	NA	NA
Distillate fuel oil ... do	25,856	27,273	25,341	27,766	[3]28,062
Residual fuel oil ... do	36,203	32,560	30,156	37,409	[3]44,170
Lubricants ... do	3,227	3,171	4,228	4,494	[4]4,830
Paraffin ... do	181	NA	NA	NA	NA
White spirit ... do	289	NA	NA	NA	NA
Asphalt and bitumen ... do	4,123	NA	NA	NA	NA
Petroleum coke ... do	240	NA	NA	NA	NA
Other ... do	249	NA	NA	NA	NA
Total ... do	107,296	NA	NA	NA	NA

[e]Estimated. [p]Preliminary. [r]Revised. NA Not available.

[1]Table includes data available through Nov. 1988.

[2]In addition to the commodities listed, bentonite, common clay, and diatomite are also produced, and tellurium may be recovered as a copper refinery byproduct, but available information is inadequate to make reliable estimates of output levels.

[3]Reported figure.

[4]Includes undetermined quantity of secondary raw material.

[5]Calculated as the difference between reported total and reported primary figure.

[6]Calculated as the difference between reported total and reported secondary figure.

[7]Calculated from pyrite and pyrrhotite concentrate using 42% as average sulfur content.

TRADE

By yearend, the National Bank of Yugoslavia reported a surplus of $1.037 billion in convertible currency current accounts, owing largely to a 5% reduction of imports and a virtually identical level of exports in 1987, compared with those of 1986. The Soviet Union remained Yugoslavia's chief trading partner, accounting for about 22% of the country's total world trade. Despite Yugoslavia's longstanding large-scale exports of bauxite to the U.S.S.R., on balance Yugoslavia's exports consisted of machinery and equipment in return for basic fuels and raw materials. In 1986, the Governments of Yugoslavia and the U.S.S.R. signed a commercial agreement for the 1986-90 period that called for exchanges of trade goods worth $37 billion. Because trade arrangements between the two countries were made on the basis of exchanging prearranged volumes and quantities of goods valued at world market prices, sharp fluctuations of world commodity prices often resulted in slow quantitative adjustments in the trade. Owing to a rapid decline in petroleum prices in 1986, by yearend Yugoslavia shipped goods valued at about $1.2 billion for which it did not receive compensation. The trade imbalance carrried over into 1987, with the Soviet Union refusing to make up the deficit with additional petroleum deliveries and Yugoslavia refusing to accept payment in Soviet-made manufactured goods.

Reportedly, Yugoslavia's exports to the U.S.S.R. in the first half of 1987 declined by 18% compared with those of the same period in 1986. By yearend the imbalance was largely corrected, and total Soviet exports to Yugoslavia increased by 118%,

with the crude petroleum component rising by 108%. Yugoslav exports to the U.S.S.R. in the second half rose by about 53%. The United States remained Yugoslavia's fourth-largest trading partner. The U.S. imports from Yugoslavia included ferroalloys, copper, and copper products, while U.S. exports included coal and coke.

Table 2.—Yugoslavia: Exports of mineral commodities[1]

(Metric tons unless otherwise specified)

Commodity	1985	1986	Destinations, 1986	
			United States	Other (principal)
METALS				
Alkaline-earth metals	(2)	(2)	--	All to Guinea.
Aluminum:				
Ore and concentrate	803,675	765,127	--	U.S.S.R. 386,730; Romania 225,646; Czechoslovakia 196,451.
Oxides and hydroxides	432,440	582,290	20	U.S.S.R. 534,410; Romania 15,000; Poland 12,883.
Metal including alloys:				
Scrap	265	1,420	--	Italy 1,117; West Germany 224; Austria 79.
Unwrought	142,699	142,227	51	Italy 38,460; France 29,802; East Germany 23,280.
Semimanufactures	66,736	84,291	10,632	Czechoslovakia 15,308; Italy 13,877.
Arsenic: Oxides and acids	--	(2)	--	All to Sweden.
Cadmium: Metal including alloys, all forms	55	23	--	All to Czechoslovakia.
Chromium:				
Ore and concentrate	13,150	7,919	--	Do.
Oxides and hydroxides	1	--		
Columbium and tantalum: Metal including alloys, all forms, tantalum	--	1	--	All to West Germany.
Copper:				
Ore and concentrate	85,391	15,000	--	Do.
Sulfate	5,433	6,875	--	Greece 3,092; China 2,000; Canada 600.
Matte and speiss including cement copper	933	--		
Metal including alloys:				
Scrap	2,436	1,634	--	Italy 983; Switzerland 651.
Unwrought	3,392	13,682	--	Italy 6,627; United Kingdom 2,962; East Germany 1,770.
Semimanufactures	30,995	32,674	3,805	West Germany 6,687; Italy 4,737.
Iron and steel:				
Iron ore and concentrate:				
Excluding roasted pyrite		4	--	All to West Germany.
Pyrite, roasted	59,727	29,143	--	Hungary 16,731; Austria 12,412.
Metal:				
Scrap	173,419	157,542	--	Italy 144,280; Austria 7,896; Hungary 2,527.
Pig iron, cast iron, related materials	19,741	14,810	--	Italy 8,022; West Germany 2,996; East Germany 785.
Ferroalloys:				
Ferrochromium	52,752	46,404	21,133	Austria 8,828; Italy 5,511; Sweden 2,924.
Ferromanganese	7,650	5,883	--	Italy 3,400; Albania 1,343; Austria 1,091.
Ferrosilicomanganese	35,860	29,168	20,639	Turkey 2,500; Italy 2,137.
Ferrosilicon	52,706	58,357	2,393	Japan 16,291; Italy 12,904; Austria 11,969.
Silicon metal	27,063	24,835	2,184	U.S.S.R. 9,999; Poland 4,107; West Germany 3,780.
Unspecified	7,266	6,537	--	West Germany 4,968; Austria 1,497; Italy 50.
Steel, primary forms	90,537	80,502	--	Italy 28,098; Poland 14,555; India 13,412.
Semimanufactures:				
Bars, rods, angles, shapes, sections	635,591	517,811	--	Egypt 139,423; West Germany 54,248; Italy 38,815.
Universals, plates, sheets	182,833	123,915	--	China 44,738; Italy 18,783; West Germany 13,358.
Hoop and strip	8,437	10,134	--	Poland 6,622; Italy 3,095; West Germany 269.
Rails and accessories	14,031	15,804	--	India 6,206; Romania 5,280; Jordan 2,639.
Wire	59,680	31,070	--	Italy 19,446; Poland 3,118; U.S.S.R. 1,968.
Tubes, pipes, fittings	158,197	137,439	3,583	East Germany 25,208; U.S.S.R. 16,082; West Germany 15,106.
Castings and forgings, rough	7,221	8,319	264	Italy 2,340; Austria 1,766; West Germany 1,489.

See footnotes at end of table.

Table 2.—Yugoslavia: Exports of mineral commodities[1] —Continued

(Metric tons unless otherwise specified)

Commodity	1985	1986	Destinations, 1986	
			United States	Other (principal)
METALS —Continued				
Lead:				
Ore and concentrate	5,764	734	—	Bulgaria 384; Romania 350.
Oxides	5	6	—	U.S.S.R. 5; Iraq 1.
Metal including alloys:				
Unwrought	17,697	12,352	—	Czechoslovakia 9,810; Italy 1,669; U.S.S.R. 466.
Semimanufactures	48	74	—	Iraq 36; U.S.S.R. 31; Libya 6.
Magnesium: Metal including alloys:				
Scrap	63	36	—	All to West Germany.
Unwrought	3,044	2,789	215	West Germany 1,489; Belgium-Luxembourg 372.
Manganese:				
Ore and concentrate, metallurgical-grade	13,281	6,995	—	Italy 6,989; Romania 6.
Oxides	[2]	—	—	—
Mercury 76-pound flasks	1,189	986	—	United Kingdom 812; Switzerland 116; Venezuela 58.
Nickel:				
Ore and concentrate	47	—	—	—
Metal including alloys:				
Scrap	398	70	—	West Germany 42; Italy 28.
Unwrought	347	—	—	—
Semimanufactures	167	1	—	Mainly to Egypt.
Platinum-group metals:				
Waste and sweepings:				
value, thousands	$19	$5	—	All to West Germany.
Metals including alloys, unwrought and partly wrought do.	$137	—	—	—
Silver:				
Ore and concentrate do.	—	[2]	[2]	
Waste and sweepings do.	$52	$6	—	All to West Germany.
Metal including alloys, unwrought and partly wrought:				
thousand troy ounces	2,990	7,105	804	Italy 4,245; West Germany 1,061.
Tin: Metal including alloys:				
Unwrought	[2]	[2]	—	NA.
Semimanufactures	1	1	—	Mainly to U.S.S.R.
Titanium: Oxides	12,302	6,496	—	Spain 4,545; Italy 1,551; Austria 400.
Tungsten: Metal including alloys:				
Unwrought	9	—	—	—
Semimanufactures	—	[2]	—	All to Czechoslovakia.
Zinc:				
Ore and concentrate	—	314	—	All to Bulgaria.
Oxides	2,085	1,886	—	West Germany 798; Romania 544; Austria 420.
Blue powder	5,828	5,861	—	Czechoslovakia 3,864; U.S.S.R. 987; Austria 848.
Metal including alloys:				
Scrap	465	[2]	—	All to Kuwait.
Unwrought	14,882	25,265	3,387	Czechoslovakia 11,740; East Germany 5,209.
Semimanufactures	[r]5,709	4,911	—	West Germany 3,069; Czechoslovakia 453; Hungary 414.
Other:				
Ashes and residues	761	1,427	—	Italy 926; Austria 501.
Base metals including alloys, all forms	—	387	385	Algeria 1; Austria 1.
INDUSTRIAL MINERALS				
Abrasives, n.e.s.:				
Natural: Corundum, emery, pumice, etc	3	151	—	U.S.S.R. 140; Iraq 10; Czechoslovakia 1.
Artificial: Corundum	15,611	19,783	—	Italy 5,245; Romania 4,831; West Germany 3,340.
Grinding and polishing wheels and stones	3,743	3,398	242	West Germany 653; Italy 368.
Asbestos, crude	2,018	1,529	—	Albania 1,526; Czechoslovakia 3.
Barite and witherite	19,790	37,095	—	U.S.S.R. 14,600; Romania 11,295; Hungary 11,200.
Boron materials: Oxides and acids	—	[2]	—	All to Iraq.
Cement	1,263,103	862,457	1,476	Egypt 524,906; Italy 170,351; Sudan 37,500.
Chalk	[2]	—	—	—

See footnotes at end of table.

Table 2.—Yugoslavia: Exports of mineral commodities[1] —Continued

(Metric tons unless otherwise specified)

Commodity	1985	1986	Destinations, 1986	
			United States	Other (principal)
INDUSTRIAL MINERALS—Continued				
Clays, crude:				
Bentonite	292	79	—	West Germany 60; Albania 19.
Chamotte earth	2	3	—	Iraq 2; Czechoslovakia 1.
Fire clay	66	437	—	Bulgaria 373; Poland 40; Albania 20.
Kaolin	4	(2)	—	All to Italy.
Unspecified	4	112	—	Austria 96; Switzerland 10; Egypt 6.
Cryolite and chiolite	14	2	—	All to Malta.
Diatomite and other infusorial earth	1,504	655	—	Austria 654.
Feldspar	6,722	2,228	—	Hungary 925; Greece 706; Bulgaria 245.
Fertilizer materials:				
Crude, n.e.s.	2	20	—	Mainly to United Kingdom.
Manufactured:				
Ammonia	64,706	46,748	—	Austria 10,482; West Germany 8,325; Hungary 1,016.
Nitrogenous	181,647	203,315	—	West Germany 56,177; Denmark 46,382; Morocco 38,484.
Phosphatic	95,809	89,834	—	Hungary 40,740; Czechoslovakia 37,255; Bulgaria 8,830.
Potassic	2	—	—	—
Unspecified and mixed	526,553	472,496	—	Hungary 100,251; West Germany 91,215; U.S.S.R. 55,281.
Graphite, natural	24	(2)	—	NA.
Gypsum and plaster	8,826	10,556	—	Hungary 10,501; U.S.S.R. 30; Italy 20.
Lime	25,796	21,958	—	Hungary 13,921; Italy 4,449; Austria 2,455.
Magnesium compounds:				
Magnesite, crude	76	59	—	Italy 42; U.S.S.R. 17.
Oxides and hydroxides	r8,195	7,894	—	Albania 4,753; Italy 1,966; Poland 539.
Mica:				
Crude including splittings and waste	(2)	—	—	—
Worked including agglomerated splittings	2	—	—	—
Nitrates, crude	2,000	—	—	—
Pigments, mineral: Iron oxides and hydroxides, processed	(2)	75	—	All to Italy.
Potassium salts, crude	—	(2)	—	All to Ethiopia.
Pyrite, unroasted	156,132	80,463	—	West Germany 79,685; Hungary 772; Malta 4.
Salt and brine	99	127	—	Hungary 50; Italy 44; Iraq 26.
Sodium compounds, n.e.s.: Carbonate, manufactured	15,228	17,179	—	Italy 9,631; Greece 3,796; Hungary 2,000.
Stone, sand and gravel:				
Dimension stone:				
Crude and partly worked	44,073	40,370	—	Italy 23,296; Czechoslovakia 12,117; Japan 2,109.
Worked	12,789	13,771	326	Austria 4,365; Italy 2,347; West Germany 1,857.
Dolomite, chiefly refractory-grade	192	107	—	Mainly to Austria.
Gravel and crushed rock	22,502	15,101	—	Czechoslovakia 4,079; U.S.S.R. 3,814; Italy 2,842.
Quartz and quartzite	14,432	15,333	—	West Germany 13,812; Spain 1,421; Poland 91.
Sand other than metal-b.	22,859	20,328	—	Italy 3,396; Greece 8,676; Albania 1,333.
Sulfur:				
Elemental: Crude including native and byproduct	—	20	—	Mainly to United Kingdom.
Sulfuric acid	22,536	9,379	—	Italy 6,161; Austria 3,211; Iraq 3.
Talc, steatite, soapstone, pyrophyllite	54	91	—	Italy 83; Austria 8.
Other:				
Crude	4,108	3,656	—	Austria 2,900; West Germany 396; U.S.S.R. 225.
Slag and dross, not metal-bearing	2,614	22,363	—	Greece 13,636; Italy 4,429; Austria 4,199.
MINERAL FUELS AND RELATED MATERIALS				
Asphalt and bitumen, natural	1,658	5	—	Iraq 3; U.S.S.R. 2.
Carbon black	170	745	—	Mainly to East Germany.
Coal:				
Anthracite	22	1	—	All to West Germany.
Bituminous	4	—	—	—
Briquets of anthracite and bituminous coal	—	2	—	All to Switzerland.
Lignite including briquets	504,450	409,672	—	Hungary 276,174; Austria 128,558; Italy 3,175.

See footnotes at end of table.

Table 2.—Yugoslavia: Exports of mineral commodities[1] —Continued

(Metric tons unless otherwise specified)

Commodity	1985	1986	Destinations, 1986	
			United States	Other (principal)
MINERAL FUELS AND RELATED MATERIALS —Continued				
Coke and semicoke	152,132	114,886	—	Hungary 55,297; Austria 24,379; Belgium-Luxembourg 10,192.
Peat including briquets and litter	3,209	1,710	—	Italy 1,340; Iraq 350; Greece 20.
Petroleum refinery products:				
Liquefied petroleum gas thousand 42-gallon barrels	86	438	—	West Germany 269; Italy 135; Hungary 28.
Gasoline do.	4,661	2,946	[2]	Italy 1,470; West Germany 865; Spain 154.
Mineral jelly and wax do.	31	52	—	West Germany 27; Italy 17; Albania 3.
Kerosene and jet fuel do.	164	294	17	United Kingdom 99; U.S.S.R. 29; Australia 19.
Distillate fuel oil do.	359	242	[2]	West Germany 228; U.S.S.R. 7; Italy 1.
Lubricants do.	858	1,673	—	Austria 673; United Kingdom 168; West Germany 86.
Residual fuel oil do.	59	2,513	—	West Germany 1,988; Italy 272; Greece 50.
Bitumen and other residues do.	1,319	818	—	Austria 436; Italy 272; Greece 50.
Bituminous mixtures do.	2	4	—	U.S.S.R. 2; Algeria 1.
Petroleum coke do.	97	67	—	Italy 44; West Germany 23.

[r] Revised NA Not available.
[1] Table prepared by Josef Plachy.
[2] Less than 1/2 unit.

Table 3.—Yugoslavia: Imports of mineral commodities[1]

(Metric tons unless otherwise specified)

Commodity	1985	1986	Sources, 1986	
			United States	Other (principal)
METALS				
Alkali and alkaline-earth metals:				
Alkali metals	[2]	77	—	U.S.S.R. 75; Austria 1; United Kingdom 1.
Alkaline-earth metals	168	148	[2]	France 122; Austria 18; Brazil 5.
Aluminum:				
Ore and concentrate	162,988	184,697	—	Guinea 121,037; Greece 25,046; China 16,794.
Oxides and hydroxides	118,366	151,469	15	Italy 69,919; Greece 43,874; Guinea 24,000.
Metal including alloys:				
Scrap	315	198	—	Mongolia 195; West Germany 3.
Unwrought	29,319	31,978	1	U.S.S.R. 31,423; Netherlands 450; United Kingdom 84.
Semimanufactures	14,063	12,285	23	U.S.S.R. 8,053; West Germany 1,528; Austria 858.
Antimony:				
Ore and concentrate	2,401	2,732	—	China 2,115; Morocco 320; Turkey 297.
Metal including alloys, all forms	234	1	—	All from Italy.
Arsenic:				
Oxides and acids	120	148	[2]	Austria 81; West Germany 45; France 20.
Metal including alloys, all forms	60	52	—	Sweden 42; West Germany 10; Austria 1.
Beryllium: Metal including alloys, all forms	[2]	[2]	[2]	Mainly from West Germany.
Bismuth: Metal including alloys, all forms	18	4	—	Belgium-Luxembourg 3; Switzerland 1.
Cadmium: Metal including alloys, all forms	[2]	1	—	All from West Germany.

See footnotes at end of table.

Table 3.—Yugoslavia: Imports of mineral commodities[1] —Continued

(Metric tons unless otherwise specified)

Commodity	1985	1986	Sources, 1986	
			United States	Other (principal)
METALS —Continued				
Chromium:				
Ore and concentrate	281,966	286,965	—	Albania 152,114; U.S.S.R. 87,294; Turkey 47,539.
Oxides and hydroxides	667	1,007	—	U.S.S.R. 499; Netherlands 230; Poland 145.
Cobalt: Oxides and hydroxides	43	33	4	West Germany 12; United Kingdom 8; Netherlands 4.
Columbium and tantalum: Metal including alloys, all forms, tantalum	2	2	(2)	Mainly from West Germany.
Copper:				
Sulfate	2,826	1,100	—	U.S.S.R. 780; Poland 320.
Metal including alloys:				
Scrap	947	206	—	U.S.S.R. 200; Bulgaria 3; West Germany 2.
Unwrought	39,255	23,902	—	Zambia 7,991; Chile 5,968; Poland 3,280.
Semimanufactures	28,165	20,981	33	Poland 14,524; West Germany 1,795; U.S.S.R. 1,528.
Iron and steel:				
Iron ore and concentrate:				
Excluding roasted pyrite	2,179,587	1,346,969	—	Brazil 381,719; U.S.S.R. 314,843; Peru 271,734.
Pyrite, roasted	1	1	—	All from West Germany.
Metal:				
Scrap	728,581	650,918	—	U.S.S.R. 560,291; Poland 44,986; Czechoslovakia 11,125.
Pig iron, cast iron, related materials	55,296	65,345	6	U.S.S.R. 33,275; Bulgaria 15,010; Turkey 11,932.
Ferroalloys:				
Ferrochromium	1,849	1,172	23	Bulgaria 347; West Germany 262; Austria 260.
Ferromanganese	1,562	1,714	—	West Germany 1,161; France 366; Austria 185.
Ferromolybdenum	697	989	—	Austria 746; West Germany 204; Italy 29.
Ferrosilicochromium	—	500	—	All from Poland.
Ferrosilicomanganese	43	(2)	—	All from Japan.
Ferrosilicon	1,074	838	—	West Germany 820; Austria 18.
Silicon metal	294	113	—	Italy 109; Austria 6; West Germany 5.
Unspecified	2,973	3,184	4	France 974; West Germany 973; Austria 676.
Steel, primary forms	762,279	815,634	—	U.S.S.R. 338,283; Czechoslovakia 255,896; Poland 71,806.
Semimanufactures:				
Bars, rods, angles, shapes, sections	186,903	199,253	7	Romania 61,406; Czechoslovakia 38,290; U.S.S.R. 21,794.
Universals, plates, sheets	431,323	506,695	11	Czechoslovakia 145,119; Austria 66,707; West Germany 56,628.
Hoop and strip	110,397	111,407	24	West Germany 32,465; Poland 28,023; Italy 9,869.
Rails and accessories	37,672	13,715	—	West Germany 5,482; Belgium-Luxembourg 2,415; Poland 1,939.
Wire	45,021	31,894	3	Czechoslovakia 7,849; West Germany 4,136; Poland 3,153.
Tubes, pipes, fittings	100,604	88,926	112	East Germany 23,333; West Germany 18,035; Italy 10,746.
Castings and forgings, rough	2,726	1,750	1	Czechoslovakia 821; West Germany 261; Romania 222.
Lead:				
Ore and concentrate	416	2,887	—	Italy 1,678; Greece 1,209.
Oxides	5,820	6,719	9	Austria 4,719; East Germany 1,510; Netherlands 358.
Metal including alloys:				
Scrap	960	1,859	—	Bulgaria 1,581; Switzerland 35; Canada 23.
Unwrought	9,520	13,439	—	Spain 4,000; Mexico 3,053; Bulgaria 2,555.
Semimanufactures	76	77	2	U.S.S.R. 41; West Germany 20; Italy 13.

See footnotes at end of table.

Table 3.—Yugoslavia: Imports of mineral commodities[1] —Continued

(Metric tons unless otherwise specified)

Commodity	1985	1986	Sources, 1986	
			United States	Other (principal)
METALS —Continued				
Magnesium: Metal including alloys:				
Unwrought	(e)	(e)	--	All from Austria.
Semimanufactures	25	65	(e)	Norway 56; West Germany 7; France 2.
Manganese:				
Ore and concentrate, metallurgical-grade	140,249	132,548	--	Republic of South Africa 61,324; U.S.S.R. 31,293; Gabon 30,603.
Oxides	692	716	1	West Germany 369; France 151; Greece 95.
Mercury 76-pound flasks	232	290	--	Austria 145; West Germany 87; Spain 58.
Molybdenum: Metal including alloys:				
Unwrought	(e)	(e)	--	All from West Germany.
Semimanufactures	15	24	(e)	Austria 17; Hungary 4; United Kingdom 2.
Nickel:				
Matte and speiss	501	235	--	Australia 176; Cuba 56; West Germany 3.
Metal including alloys:				
Scrap	--	(e)	--	All from West Germany.
Unwrought	2,839	2,395	--	U.S.S.R. 1,797; Bulgaria 264; West Germany 228.
Semimanufactures	667	1,078	6	U.S.S.R. 526; West Germany 182; Italy 88.
Platinum-group metals: Metals including alloys, unwrought and partly wrought value, thousands	$2,782	$2,332	$49	Czechoslovakia $999; U.S.S.R. $492; West Germany $400.
Silver:				
Waste and sweepings do	--	(e)	--	All from West Germany.
Metal including alloys, unwrought and partly wrought thousand troy ounces	1,061	675	NA	Austria 450; West Germany 96; Italy 64.
Tin:				
Oxides	8	2	--	Japan 1; Netherlands 1.
Metal including alloys:				
Unwrought	1,287	1,565	--	Malaysia 1,199; Brazil 121; West Germany 119.
Semimanufactures	42	28	1	West Germany 25; Italy 1.
Titanium:				
Ore and concentrate	27,275	48,147	--	Australia 47,793; Sri Lanka 276; West Germany 54.
Oxides	1,080	919	--	West Germany 381; Czechoslovakia 220; Poland 175.
Tungsten:				
Ore and concentrate	2	--		
Metal including alloys:				
Unwrought	2	2	--	Bulgaria 1.
Semimanufactures	15	11	(e)	Switzerland 4; Czechoslovakia 3; Hungary 2.
Zinc:				
Ore and concentrate	58,669	38,590	346	Czechoslovakia 14,167; Peru 10,071; Greece 8,714.
Oxides	3,226	1,970	--	Austria 839; Czechoslovakia 710; West Germany 265.
Blue powder	--	8	--	France 7.
Metal including alloys:				
Unwrought	39,281	18,773	--	Algeria 3,773; Bulgaria 3,537; Austria 2,993.
Semimanufactures	721	239	--	Bulgaria 188; Poland 41; Italy 7.
Other:				
Ores and concentrates	1,741	2,048	--	West Germany 1,342; Italy 406; Netherland 198.
Ashes and residues	1,400	1,707	--	Switzerland 1,339; Canada 289; Italy 79.
Base metals including alloys, all forms	588	415	12	Netherlands 162; West Germany 76; China 49.

See footnotes at end of table.

Table 3.—Yugoslavia: Imports of mineral commodities[1] —Continued

(Metric tons unless otherwise specified)

Commodity	1985	1986	Sources, 1986	
			United States	Other (principal)
INDUSTRIAL MINERALS				
Abrasives, n.e.s.:				
Natural, corundum, emery, pumice, etc	294	334	--	Poland 222; Italy 95; Austria 9.
Artificial, corundum	1,988	1,914	14	Poland 759; Austria 484; Czechoslovakia 381.
Dust and powder of precious and semiprecious stones including diamond value, thousands	$1,502	$1,813	$6	Belgium-Luxembourg $555; U.S.S.R. $543; Switzerland $523.
Grinding and polishing wheels and stones	1,067	1,062	30	Austria 441; Italy 222; Poland 106.
Asbestos, crude	54,372	44,212	--	U.S.S.R. 30,066; Zimbabwe 6,180; Canada 3,918.
Barite and witherite	270	2,365	--	Italy 1,801; West Germany 252; United Kingdom 212.
Boron materials:				
Crude natural borates	33,687	34,453	8,742	Turkey 25,430; West Germany 159.
Oxides and acids	2,634	5,269	--	Italy 3,211; U.S.S.R. 657; Turkey 460.
Bromine	2	1	--	Mainly from Israel.
Cement	134,603	59,621	2,001	Hungary 24,215; Czechoslovakia 14,128; U.S.S.R. 10,125.
Chalk	3,967	4,775	--	France 2,370; Austria 1,877; Switzerland 400.
Clays, crude:				
Bentonite	15	51	--	West Germany 50; United Kingdom 1.
Chamotte earth	7,716	1,169	--	Czechoslovakia 549; France 415; United Kingdom 103.
Fire clay	36,643	50,376	587	Czechoslovakia 43,501; Spain 3,650; Poland 1,008.
Kaolin	83,136	93,096	925	Czechoslovakia 39,236; Greece 19,199; East Germany 13,883.
Unspecified	6,573	7,672	141	Poland 5,426; Czechoslovakia 1,797; Hungary 168.
Cryolite and chiolite	675	425	--	Denmark 424; United Kingdom 1.
Diamond:				
Gem, not set or strung value, thousands	$449	$1,603	--	Belgium-Luxembourg $1,411; United Kingdom $124; Ireland $65.
Industrial stones do	$1,426	$404	--	Belgium-Luxembourg $198; Switzerland $185; West Germany $20.
Diatomite and other infusorial earth	1,144	1,187	178	Italy 377; United Kingdom 305.
Feldspar, fluorspar, related materials:				
Feldspar	910	490	--	France 400; Finland 60; Czechoslovakia 20.
Fluorspar	9,298	9,223	--	China 5,576; France 1,304; East Germany 1,246.
Fertilizer materials:				
Crude, n.e.s	680	156	--	U.S.S.R. 100; France 56.
Manufactured:				
Ammonia	67,179	70,260	--	Hungary 44,822; Austria 6,626; U.S.S.R. 6,386.
Nitrogenous	462,003	357,685	--	Czechoslovakia 113,213; Hungary 100,397; U.S.S.R. 92,678.
Phosphatic	60,539	27,295	--	Romania 21,350; Tunisia 5,945.
Potassic	621,868	578,179	(2)	U.S.S.R. 293,321; East Germany 280,388; Austria 2,500.
Unspecified and mixed	131,529	79,264	42,966	Romania 26,991; Tunisia 7,990.
Graphite, natural	2,267	2,234	8	Czechoslovakia 1,391; West Germany 366; Austria 284.
Gypsum and plaster	24	62	4	West Germany 50; Italy 8.
Iodine	85	51	1	Japan 37; Chile 9; U.S.S.R. 3.
Lime	732	308	--	Bulgaria 265; United Kingdom 20.
Magnesium compounds:				
Magnesite, crude	27,533	5,244	--	All from Greece.
Oxides and hydroxides	r15,805	16,388	(3)	Greece 12,660; Italy 2,003; Norway 682.
Mica:				
Crude including splittings and waste	253	297	1	West Germany 171; India 67; France 39.
Worked including agglomerated splittings	132	112	--	Czechoslovakia 51; Austria 19; West Germany 18.
Nitrates, crude		100	--	All from East Germany.
Phosphates, crude	1,312,471	1,439,150	--	Jordan 584,580; Morocco 368,246; Togo 210,861.
Pigments, mineral: Iron oxides and hydroxides, processed	2,134	2,472	5	West Germany 861; Belgium-Luxembourg 525; U.S.S.R. 454.

See footnotes at end of table.

Table 3.—Yugoslavia: Imports of mineral commodities[1] —Continued

(Metric tons unless otherwise specified)

Commodity	1985	1986	Sources, 1986: United States	Sources, 1986: Other (principal)
INDUSTRIAL MINERALS —Continued				
Potassium salts, crude	2	1	--	All from West Germany.
Precious and semiprecious stones other than diamond:				
Natural value, thousands	$58	$104	--	West Germany $58; Switzerland $29; Australia $12.
Synthetic do.	$190	$219	--	Switzerland $97; West Germany $48; Austria $37.
Pyrite, unroasted	61,091	4,584	--	Albania 4,500; France 84.
Salt and brine	320,812	290,413	--	Romania 238,110; Egypt 15,830; Tunisia 15,377.
Sodium compounds, n.e.s.: Carbonate, manufactured	65,820	70,578	--	Romania 45,861; East Germany 8,450; Poland 5,706.
Stone, sand and gravel:				
Dimension stone:				
Crude and partly worked	312	1,898	--	U.S.S.R. 977; Czechoslovakia 396; France 387.
Worked	224	215	--	Albania 153; Italy 55; West Germany 6.
Dolomite, chiefly refractory-grade	514	185	--	West Germany 150; Norway 35.
Gravel and crushed rock	312	2,594	--	Hungary 1,424; Austria 891; Belgium-Luxembourg 116.
Limestone other than dimension	775			
Quartz and quartzite	17,740	8,046	20	Spain 6,115; Turkey 902; West Germany 890.
Sand other than metal-bearing	56,786	72,832	653	Hungary 26,995; Czechoslovakia 21,674; West Germany 20,031.
Sulfur:				
Elemental:				
Crude including native and by-product	162,726	171,756	94	Poland 136,986; Canada 17,845; Saudi Arabia 9,670.
Colloidal, precipitated, sublimed	584	498	--	Poland 244; West Germany 151; Hungary 59.
Dioxide	200	350	--	All from Italy.
Sulfuric acid	58,672	11,866	--	Hungary 9,572; Czechoslovakia 1,731; Austria 333.
Talc, steatite, soapstone, pyrophyllite	4,378	4,856	--	Austria 1,406; West Germany 1,258; Belgium-Luxembourg 966.
Other:				
Crude	13,317	14,768	24	Hungary 10,898; U.S.S.R. 2,196; Austria 537.
Slag and dross, not metal-bearing	11,808	5,207	--	Canada 4,999; Italy 191; West Germany 17.
MINERAL FUELS AND RELATED MATERIALS				
Asphalt and bitumen, natural	536	76	10	Albania 59; West Germany 4.
Carbon black	27,751	25,784	34	Italy 17,490; Mexico 3,465; France 1,819.
Coal:				
Anthracite thousand tons	247	211	--	All from U.S.S.R.
Bituminous do.	4,033	3,813	584	U.S.S.R. 2,259; Poland 510.
Briquets of anthracite and bituminous coal do.	--	1	--	All from Poland.
Lignite including briquets do.	162	186	--	U.S.S.R. 91; East Germany 79; Czechoslovakia 15.
Coke and semicoke do.	35	41	12	Turkey 16; Italy 7.
Gas, natural, gaseous million cubic feet	129,933	130,553	--	All from U.S.S.R.
Peat including briquets and litter	7,445	9,048	--	U.S.S.R. 7,919; Hungary 1,129.
Petroleum:				
Crude thousand 42-gallon barrels	64,696	80,820	--	Iraq 39,681; U.S.S.R. 15,471; Libya 10,081.
Refinery products:				
Liquefied petroleum gas do.	862	582	--	Bulgaria 434; Hungary 101; United Kingdom 14.
Gasoline do.	150	574	(2)	United Kingdom 264; Turkey 170; Hungary 89.
Mineral jelly and wax do.	22	22	(2)	Italy 7; West Germany 6; Netherlands 2.
Kerosene and jet fuel do.	835	787	--	Italy 581; Hungary 142; United Kingdom 41.
Distillate fuel oil do.	88	1,164	4	U.S.S.R. 473; Hungary 293; United Kingdom 149.
Lubricants do.	589	711	1	Italy 167; Hungary 108; Bulgaria 86.
Residual fuel oil do.	9,096	5,351	--	U.S.S.R. 2,993; Italy 989; France 346.

See footnotes at end of table.

Table 3.—Yugoslavia: Imports of mineral commodities[1] —Continued

(Metric tons unless otherwise specified)

Commodity	1985	1986	Sources, 1986	
			United States	Other (principal)
MINERAL FUELS AND RELATED MATERIALS —Continued				
Petroleum —Continued				
Refinery products —Continued				
Bitumen and other residues thousand 42-gallon barrels	1	5	--	Albania 4; Netherlands 1.
Bituminous mixtures do.	1	1	(2)	Mainly from Italy.
Petroleum coke do.	562	757	386	West Germany 65; U.S.S.R. 49.

[r]Revised. NA Not available.
[1]Table prepared by Jozef Plachy.
[2]Less than 1/2 unit.

COMMODITY REVIEW

METALS

Aluminum and Bauxite.—In 1987, bauxite production declined slightly compared with that of 1986. The Nisic mines near Titograd produced approximately one-third of the total output of bauxite for the year. However, underground operations at Nisic continued to increase, and mining conditions worsened during the year. About 25% of the bauxite produced at Nisic in 1987 was exported. The balance of the country's bauxite was produced largely by open pit operations at Vlasenica. Yugoslavia's production of bauxite in 1987 amounted to 3.6% of the total world output and 20% of the combined output of Europe and the U.S.S.R. In keeping with the program to introduce new technology to modernize aluminum production, the Boris Kidric alumina-refining and aluminum-smelting enterprise put on-stream a new 21,000-ton-per-year anode plant and planned the completion of a new electrolysis plant with 72 electrolytic units in 1988. When completed, the new electrolysis plant would add 35,000 tons of aluminum-smelting capacity to the Boris Kidric enterprise. At yearend, the Mostar aluminum enterprise began preparations for the construction of a fabricating facility for drawn aluminum and aluminum rods and tubes at Citluk. When fully operational, the plant would process 2,250 tons of metal per year and allocate about 60% of its production for export.

Antimony.—Although the production of antimony declined by more than 30% in 1987 compared with that in 1985, Yugoslavia remained a major European producer. The small-sized vein ore deposits in the western part of Serbia were mined by the Zajaca mining and metallurgical complex at the Brasina, Dolici, Kik, Rujevac, Stira, and Zavorje Mines. The ore was mined entirely underground, largely by means of roof plate caving and hanging wall caving. The discovery of substantial antimony deposits in the early 1980's at Vinogradi near Rujevac as well as other smaller deposits in southern Serbia and Macedonia added more than 1 million tons of ore reserves to this industry. In 1987, Yugoslavia's monthly average exports of unwrought antimony to the United States increased by 24% compared with those from 1981 to 1985.

Copper.—Copper ore was mined and processed at the Bor, Bucim, and Majdanpek mining and beneficiation complexes, which in 1987 accounted for 43%, 13%, and 44%, respectively, of Yugoslavia's copper output. The average grade of ore at Bor ranged from 0.47% to 0.90%. Ore grades at Bucim and Majdanpek were 0.27% and 0.56%, respectively. Ore reserves were reported at several hundred million tons, and included associated gold, iron, molybdenum, rare metals, and silver. Open pit mining accounted for about 70% of total output. Underground mining was carried out only at Bor, where both mining methods were used.

At yearend, Yugoslavia announced plans to modernize a lacquered copper factory at Bor. The project was to be completed by 1990 at a cost of $10 million, and would raise production from 16,000 to 18,000 tons per year. Most of the production would be exported.

Gold.—A deposit containing pebbles bearing gold and rare metals was discovered in eastern Serbia near Bosilegrad. The pebble-bearing strata were determined to be 40 meters thick and 5 kilometers long. The strata were estimated at 200 million cubic meters. Analysis of a 150-ton ore sample

reportedly indicated that mining would be feasible. At yearend, Yugoslavia announced plans to reopen the Blagoev Kamen gold mine in the Bor mining district. The mine, closed since 1964, was reported to have an average ore grade of 8 grams of gold per ton. Additional geological work would be conducted to determine the extent of ore reserves.

Iron and Steel.—At the end of December, the Serbian Government approved a recovery program for the Smeredevo iron and steel works, the country's largest unprofitable business. The steel company's losses for 1987 amounted to about $90 million. In addition, the company owed $1.5 billion to foreign banks and $150 million to Yugoslav banks. The recovery program and the development of the next stage of Smeredevo's steelmaking operations would cost about $1 billion, which would be provided jointly by the Serbian Government, the Investbanka Bank of Belgrade, and the company's business partners.

The Government indicated that Smeredevo's planned output of more than 1 million tons of steel by 1993 would enable the company to operate profitably and to begin paying its debts. A declaration of bankruptcy would result, among other things, in direct costs of $1.6 billion and a sizable unpaid foreign debt, as well as a loss through 1993 of steel products worth $3 billion, which would then have to be imported. Bankruptcy would also have a major impact on the country's unemployment. At yearend, the Smeredevo iron and steel works planned to increase cold-rolled sheet output from 150,000 tons in 1987 to 650,000 by 1990.

In October, the Skopje iron and steel enterprise ceased operations owing to rising costs of electricity and transportation. The Sisak iron and steel works in Croatia announced plans to construct a new mill to produce 200,000 tons per year of seamless tubes. Sisak also commissioned a new 550,000-ton-per-year iron ore concentrator that would allow the company to increase output by 25%.

In 1987, the European Economic Community (EEC) Commission began an inquiry on allegations of dumping of cold-rolled steel on the European market by Yugoslavia. Complaints were made that Yugoslavia's steel exports were undercutting EEC prices by between 16% and 44%, while exports of Yugoslav steel rose by 433%. Following the inquiry, the Commission imposed tariffs on Yugoslavia's hot- and cold-rolled plate.

Lead and Zinc.—The Trepca lead and zinc mining, smelting, and refining complex in Kosovo, the country's largest lead and zinc producer, incurred substantial financial losses. According to Government authorities, obsolescent equipment, a decline in ore quality, and poor management contributed to the company's financial downturn. Trepca's plans for 1988 called for a reduction in the output of electrolytic zinc by 5,000 tons and an increase in the production of refined lead by 20,000 tons. The Zletovo lead and zinc smelter at Titov Veles fulfilled its plan for 1987. The combined output of lead and zinc at the smelter by yearend amounted to 82,000 tons.

INDUSTRIAL MINERALS

Calcite.—Construction of Yugoslavia's first calcite mine at Gadzin Han in Serbia started late in the year. Operational startup was scheduled for the second half of 1988, and production would amount to about 35,000 tons per year from a reserve base estimated at 1.5 million tons. The calcite was determined to be of a very high purity, containing 99.8% calcium carbonate, and would be used directly by the country's pharmaceutical and cosmetics industries.

Quartz.—The Bor copper-mining and metallurgical complex planned to use some of its capacity to produce extra-pure glass, ceramics, and high-temperature superconductors based on quartz sand. Raw materials would be obtained at a new quartz sand mine near the Bor complex with reserves estimated at 20 million tons. The project cost was to be about $20 million.

MINERAL FUELS

In November, Yugoslavia added four new electric power stations that raised the country's electric-power-generating capacity to 20,546,300 megawatts. The coal-fired Drmno-1 and Kakanj-5 plants had the largest installed capacity of the four plants. The two smaller plants were hydrogenerated. A spokesperson for the Federal Energy Commission indicated that the country could satisfy its demands for power from conventional, nonnuclear sources. Yugoslavia's lignite reserves were sufficient for 250 years, those of brown and bituminous coal, for 50 and 40 years, respectively. By 1997, coal consumption was planned to be about 130 million tons per year. To meet this target, facilities under construction would add 44.4 million tons of coal for domestic consumption.

Coal.—Coal production for 1988 was

planned at 77.2 million tons. To meet this target, new facilities would be put into operation while existing ones would be expanded. These were to include the startup of the Globnuko, Koromacno, and the Vojakovacki Kloster Mines in western Yugoslavia, and the Drmno and Zabela-Kosa Mines in the eastern part of the country. Mine expansion would be completed at the Kolubara Coalfield near Belgrade, and at Tuzla and Zenica in central Yugoslavia and in Kosovo. In 1987, lignite production at the Kolubara-Lazarevac Field reached 26 million tons, about 1 million tons in excess of the plan for the year. The Kolubara-Lazarevac Field accounted for about 36% of the country's total coal production.

Petroleum and Natural Gas.—In 1987, the Naftagas enterprise of Novi Sad conducted seismic and geophysical explorations at the oilfields near Vrsac. A total of $150 million was allocated for petroleum and natural gas exploration in this region through 1990. In other developments, the Ina-Naftaplin enterprise in Zagreb invested $27.2 million, or 77% of the enterprise's planned investment for 1987 for petroleum and gas pipeline construction and related facilities.

[1]Foreign mineral specialist, Division of International Minerals.

☆ U.S. GOVERNMENT PRINTING OFFICE: 1989—242-377/82061